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Pseudocercospora heliconiae sp. nov. causing leaf blight on parakeet flower, *Heliconia psittacorum* (*Heliconiaceae*), in Brazil

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Abstract — The leaf spotting hyphomycete *Pseudocercospora heliconiae* sp. nov., collected on *Heliconia psittacorum* in a commercial nursery in Viçosa, Minas Gerais State, Brazil, is described, illustrated, discussed and compared with allied species.

Key words — cercosporoid, ornamental plant, phytopathology, plant disease, taxonomy, tropical fungi

Introduction

In May 2008, a severe leaf spot disease was observed on *Heliconia psittacorum* L. f. (parakeet flower) in Minas Gerais State, Brazil. A fungus belonging to the genus *Pseudocercospora* Speg., was consistently found associated with the symptoms observed. This important ornamental species is known as an alternative host for *Pseudocercospora fijiensis* (M. Morelet) Deighton (the agent of the black leaf streak of banana) in Brazil, the sole alternative host not belonging to the genus *Musa* L. Morphological studies and pathogenicity tests were conducted to elucidate the disease aetiology. The fungus was proved to be distinct of *P. fijiensis* and other related *Pseudocercospora* spp. on *Musaceae* and proposed as a new species within the genus *Pseudocercospora*. This new species is described, illustrated, and discussed in this paper.

Material and methods

Samples of *H. psittacorum* infected with *P. heliconiae* were collected, photographed (SONY DSC-H9 digital camera), dried in a plant press and deposited at the herbaria VIC and HAL. Under a stereomicroscope, selected structures of the fungus were removed from fresh leaf spots and mounted in glass slides with lactophenol. Observations, measurements and illustrations were carried out by

means of an OLYMPUS BX 50 light microscope fitted with a digital camera (EVOLT E330) and a drawing tube. Wherever possible, 30 measurements were made of the structures mounted. To perform the pathogenicity tests, the fungus was isolated onto PDA, brought into pure culture and grown at 27°C for 20 days. Cultures disks were taken from the border of the colonies and used to inoculate four healthy young and mature leaves of *H. psittacorum* and banana plants (cv. Prata Anã). The inoculated plants were maintained in moist chambers for two days and then transferred to a greenhouse at 25°C. Leaves of both species, on which only PDA plugs were placed, served as control.

Taxonomic description

Pseudocercospora heliconiae Meiriele Silva & O.L. Pereira, **sp. nov.** Figs 1–6

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Maculae amphigenae, irregulares, necroticae, brunneae, confluentes. Stromata nulla vel minuta. Caespituli saepe hypophylli, atro-brunnei. Conidiophora laxe vel dense fasciculata, pauca vel modice numerosa, per stoma emergentia, recta vel curvata, cylindrica, non ramosa, 22.5–77.5 × 5.0–8.75 µm, medio-brunnea, laevia, 0–2 septata. Cellulae conidiogenae integratae, terminales, laeviae, cicatrices conidiales inconspicuae. Conidia, solitaria, pallide brunnea, cylindrica, recta ad leviter curvata, 52.5–120.5 × 4.5–6.0 µm, apice obtuso, basi truncata, hila non incrassata, non fuscata, 0–5-septata, laevia.

Holotype: BRAZIL, Minas Gerais, Viçosa, on leaves of *Heliconia psittacorum* L. f. (*Heliconiaceae*), 12 May 2008, O. L. Pereira (VIC 31221). **Isotype:** HAL 2356 F.

Etymology: referring to the host genus *Heliconia*.

Leaf spots amphigenous, irregular, necrotic, brownish, confluent, covering large areas of the leaf surfaces. Stromata absent or small. Caespituli mainly hypophyllous, dark brown. Conidiophores in loose to dense, small to moderately large fascicles, straight to curved, cylindrical, unbranched, 22.5–77.5 × 5.5–8.75 µm, 0–2 septate, medium brown, smooth. Conidiogenous cells integrated, terminal, smooth, scars inconspicuous. Conidia solitary cylindrical, straight to slightly curved, 52.5–120.5 × 4.5–6.0 µm, 0–5-septate, pale brown, smooth, apex obtuse, base truncate, hilum neither thickened nor darkened.

Comments — Necrotic symptoms, similar to those originally observed in the field, were detected 10 days after inoculation only on mature leaves of *H. psittacorum*. Inoculated leaves of cv. Prata Anã and uninoculated control leaves, on which only PDA plugs were placed, remained healthy. The fungus was then reisolated, satisfying Koch's Postulates.

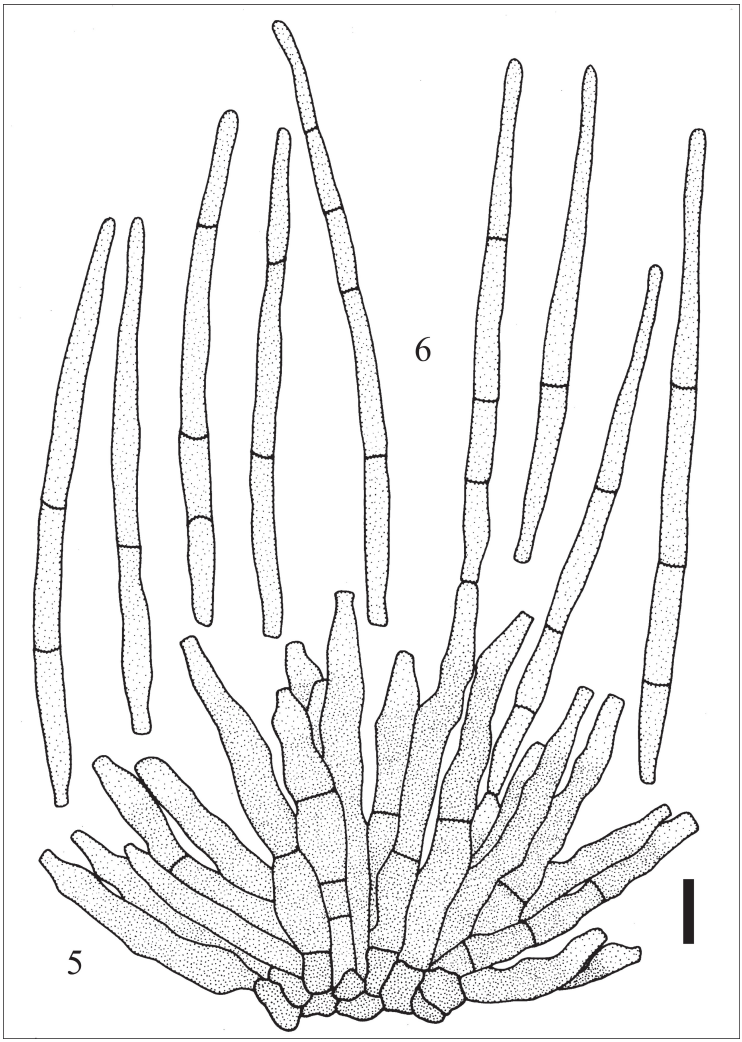
Only two cercosporoid fungi are known to occur on members of the genus *Heliconia* L., viz. *Cercospora heliconiae* Chowdhry et al. reported on *Heliconia caribaea* Lam. in India (Crous & Braun 2003) and *Pseudocercospora fijiensis* reported on *H. psittacorum* in Brazil (Gasparotto et al. 2005). *Cercospora heliconiae* is considered to be a true *Cercospora* s. str., close or identical to

Figs 1–2. *Pseudocercospora heliconiae.* 1. Leaf blight on *Heliconia psittacorum* from a commercial nursery for cut flower in Viçosa, Minas Gerais, Brazil. 2. Detail of coalescent lesions on leaves.

Cercospora apii Fresen. s. lat. (Crous & Braun 2003). *Pseudocercospora fijiensis*, the causal agent of the black leaf streak of banana, is the sole *Pseudocercospora* reported on the genus *Heliconia*. However, *P. fijiensis* has very diagnostic scars and hila (*Paracercospora*-like, thickened and darkened ultimate rim) (Mulder & Holliday 1974), which were not observed in the samples of *H. psittacorum* from Minas Gerais. Additionally, despite the conidia of *Pseudocercospora heliconiae* resemble those of *P. fijiensis* in color, they are wider and longer.

As *Heliconiaceae* was previously regarded a subfamily within *Musaceae* we compared *P. heliconiae* with nine additional *Pseudocercospora* spp. that have been recorded on *Musaceae*. *Pseudocercospora assamensis* Arzanlou & Crous, *P. indonesiana* Arzanlou & Crous, *P. musae-sapientum* (A.K. Kar & M. Mandal) U. Braun & Mouch., *P. fengshanensis* (T.Y. Lin & J.M. Yen) J.M. Yen & S.K. Sun, *P. musicola* U. Braun, *P. vanieriae* (Chupp & Linder) U. Braun & Crous, *P. musae* (Zimm.) Deighton and *P. eumusae* Crous & Mour., can be distinguished of *P. heliconiae* by having shorter conidia (Chupp 1954, Hsieh & Goh 1990,

Figs 3–4. *Pseudocercospora heliconiae.* 3. Leaf blight on a severely infected plant leading to leaf death. 4. Detail of blight symptom covering the role leaf surface.



Figs 5–6. *Pseudocercospora heliconiae* (VIC 31221, holotype).
5. Fasciculate conidiophores with inconspicuous conidiogenous cells.
6. Cylindrical conidia with truncate inconspicuous hila.
Scale bar: 10 μm.

Braun et al. 1999, Crous & Mourichon 2002, Arzanlou et al. 2008), while *P. longispora* Arzanlou & Crous has narrower conidia (Arzanlou et al. 2008). Hence, the introduction of a new species is undoubtedly justified.

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Literature cited

Arzanlou M, Groenewald JZ, Fullerton RA, Abeln ECA, Carlier J, Zapater Mf, Budenhagen IW, Viljoen A, Crous PW. 2008. Multiple gene and phenotypic characters differentiate several novel species of *Mycosphaerella* and related anamorphs on banana. Personia 20: 19–37.

Braun U, Mouchacca J, McKenzie EHC. 1999. Cercosporoid hyphomycetes from New Caledonia and some other South Pacific Islands. New Zealand Journal of Botany 37: 297–327.

Chupp C. 1954. A monograph of the fungus genus *Cercospora*. Ithaca, Published by the author.

Crous PW, Braun U. 2003. *Mycosphaerella* and its anamorphs: I. Names published in *Cercospora* and *Passalora*. Utrecht, CBS Biodiversity Series 1: 1–569.

Crous PW, Mourichon X. 2002. *Mycosphaerella eumusae* and its anamorph *Pseudocercospora eumusae* sp. nov.: causal agent of eumusae leaf spot disease of banana. Sydowia 54 (1): 35–43.

Gasparotto L, Pereira JCR, Urben AF, Hanada RE, Pereira MCN. 2005. *Heliconia psittacorum*: hospedeira de *Mycosphaerella fijiensis*, agente causal da sigatoka-negra da bananeira. Fitopatologia Brasileira 30: 423–425. doi:10.1590/S0100-41582005000400016

Hsieh WH, Goh TK. 1990. *Cercospora* and similar fungi from Taiwan. Taipei. Maw Chang Book Company.

Mulder JL, Holliday P. 1974. *Mycosphaerella fijiensis*. CMI Descriptions of pathogenic fungi and bacteria nº 413.